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THE EXCAVATION OF THE CANNONBALL RUINS IN SOUTHWESTERN COLORADO

BY

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THE EXCAVATION OF THE CANNONBALL RUINS IN SOUTHWESTERN COLORADO[1]

BY SYLVANUS G. MORLEY

The region of the Four Corners, that geographical monument which has the distinction of marking the only spot in this country where four states, namely, Colorado, Utah, Arizona, and New Mexico, meet at one point, is interesting also because of the surpassing opportunities which it presents for archeological research. The San Juan river and the cañons which its tributaries have cut for themselves in this part of the Great American Plateau offered a more suitable environment for the development of a primitive culture than for the support of our own race, of which a few stragglers only have been able to win a doubtful foothold in the arid cañons and on the barren mesas in which this region abounds. On every side, sometimes a two or three days' ride from known water, one encounters the shapeless piles of fallen masonry overgrown with sage, cactus, and piñon, which so eloquently testify to the former density of the aboriginal population: a density which the cattlemen of the country do not hesitate to affirm outnumbered that of the present day ten to one.

The several cañons of the San Juan drainage afforded in earlier times shelter to as many peoples, differing from each other in the minor points of their culture, such as the development of pottery decoration, the restriction of design to the geometric in one region, the tendency toward the realistic in another, but all resembling one another strongly in the broader lines of their culture, such as the technical processes employed in the making of pottery, and the fundamental principles of their architecture. This fundamental unity, which seems to underlie the different groups of peoples that

[1] Mr Morley's paper is a preliminary report of the field work of the Colorado Society of the Archæological Institute of America for the season of 1908. The work is conducted by the School of American Archæology in coöperation with the State University and the State Historical Society of Colorado. — EDGAR L. HEWETT, *Director*.

inhabited these cañons of the San Juan drainage, is seen to advantage in the ruins of the northern tributaries of that river. The treatment of building materials and the selection of building sites, on the architectural side alone are only two of many points that show the broad similarities of the different groups. And yet such are the differences, due to isolation and to local dissimilarities of environment, even between peoples of adjacent cañons, that it has been possible to classify the primitive inhabitants of this region into different culture groups, each characterized by certain distinguishing features that differentiate it sharply from all the others.

McElmo creek, on one of the tributaries of which the Cannonball ruins are situated, rises in southwestern Colorado and after flowing due west to the Utah line turns somewhat south and gives into the San Juan about fifteen miles below. The most striking characteristic of the ruins of the McElmo area, which differentiates them at once from those of the Mesa Verde immediately to the east and Montezuma creek to the west, is the peculiarity of their location. While the buildings of the Mesa Verde on the one hand are situated in natural caves or under overhanging ledges left by some freak of erosion, those of Montezuma creek, on the other, occupy the centers of the mesas that separate the cañons one from another. The structures of the McElmo area are essentially rim-rock dwellings; that is, they are built on the very edges of the mesas and overlook the cañons, the sides of which are frequently so precipitous as to be well-nigh inaccessible.

The Cannonball ruins are situated at the head of a small cañon of the same name, which empties into Yellowjacket cañon, the most considerable northern tributary of McElmo creek. This group is composed of two pueblos on the opposite rims of the cañon from each other, and a square tower built upon a detached rock in the bed. The two pueblos are built upon the very edges of the mesa. The cañon wall below them drops twenty feet or more sheer. This huddling close to the rim insured impregnability from any attack that might have been directed against the settlement from enemies in the cañon itself, while the watchtower was so placed as to give ample warning of invasion from that side and thus afforded an additional element for safety. It was from the mesa side — the back-

yards of their houses, so to speak — that danger from without was chiefly to be apprehended; and the manner in which this difficulty was overcome illustrates well the architectural adaptability of this people. They built no first-floor outside doorways in walls facing upon the mesa, a practice that holds true not only for the two pueblos of the Cannonball group, but also for all the more important ruins of the McElmo area. Indeed no example of a first-floor doorway facing on the mesa side was observed in any of the ruins of this region. Entrance to structures was effected by doorways in the sides that front on the cañons. These open upon narrow ledges between the house walls and the cañon edges, varying from two to three feet in width. Flanking walls from the corners of the houses nearest the cañons cut these spaces off from the mesas. To reach them from below, ladders or notched trees doubtless had been employed, all traces of which, however, have long since disappeared.

The Southern and smaller pueblo of the two, was the one selected for excavation by the Colorado Branch of the Archæological Institute of America during the field season of 1908. It stands on the southern side of the cañon, facing north, with its long axis east and west. The ground rises gently from the back of the structure for about two hundred yards to the summit of the mesa, and then falls off gradually for the same distance on the other side to the southern edge, there breaking off sharply into McElmo cañon. In the course of time the rocky top of the mesa has become covered with a red soil into which the red sandstone of this region disintegrates. This supports a sparse growth of sage, cactus, greasewood, scrubby piñon, and a limited quantity of tuft-grass. Originally, at the time of the occupancy of the pueblo, the mesa top had been under cultivation. There seems to have been a considerable irrigation system, consisting of a reservoir and several irrigating ditches east of the pueblo. Quantities of corncobs and the seeds of a species of squash found in abundance during the course of the excavation indicate at least two of the crops harvested by the aboriginal inhabitants.

The Southern pueblo is close to the edge of the rimrock, as may be seen in plate XXXVI, *a*, with its long axis parallel to the cañon edge. The maximum length is 114 feet, the maximum breadth

72 feet. The walls, for the greater part, are broken down to within three or four feet of the ground, though the tower seen in the photograph to the right in the background still stands to a height of ten feet, and a section of wall at the left rises five or six feet higher. The floors of the building are on two different levels, the front range of rooms being lower by some eight feet than the back range. The lower range (see plan, pl. XXXVII) is composed of five kivas, or circular rooms, excavated in the soil of the mesa to such a depth as was necessary for the utilization of the rim-rock as the flooring. The upper range of rooms have their floors on the same level as the roofs of the five kivas of the lower range, that is, on the same level as the mesa outside the walls. In addition to this step-like arrangement proceeding from the rooms fronting on the cañon to those on the mesa side, the rooms are progressively lower from west to east, or from right to left in the illustration. This latter difference in floor level (that from west to east) is due to the configuration of the rim-rock, its gradual descent toward the head of the cañon, and is wholly accidental; but the other inequality, the step-like arrangement from front to back, is due to the necessity which these people apparently felt for having their ceremonial rooms, the kivas, subterranean or semi-subterranean. All examples of this type of room found in the McElmo area were either wholly subterranean or nearly so.

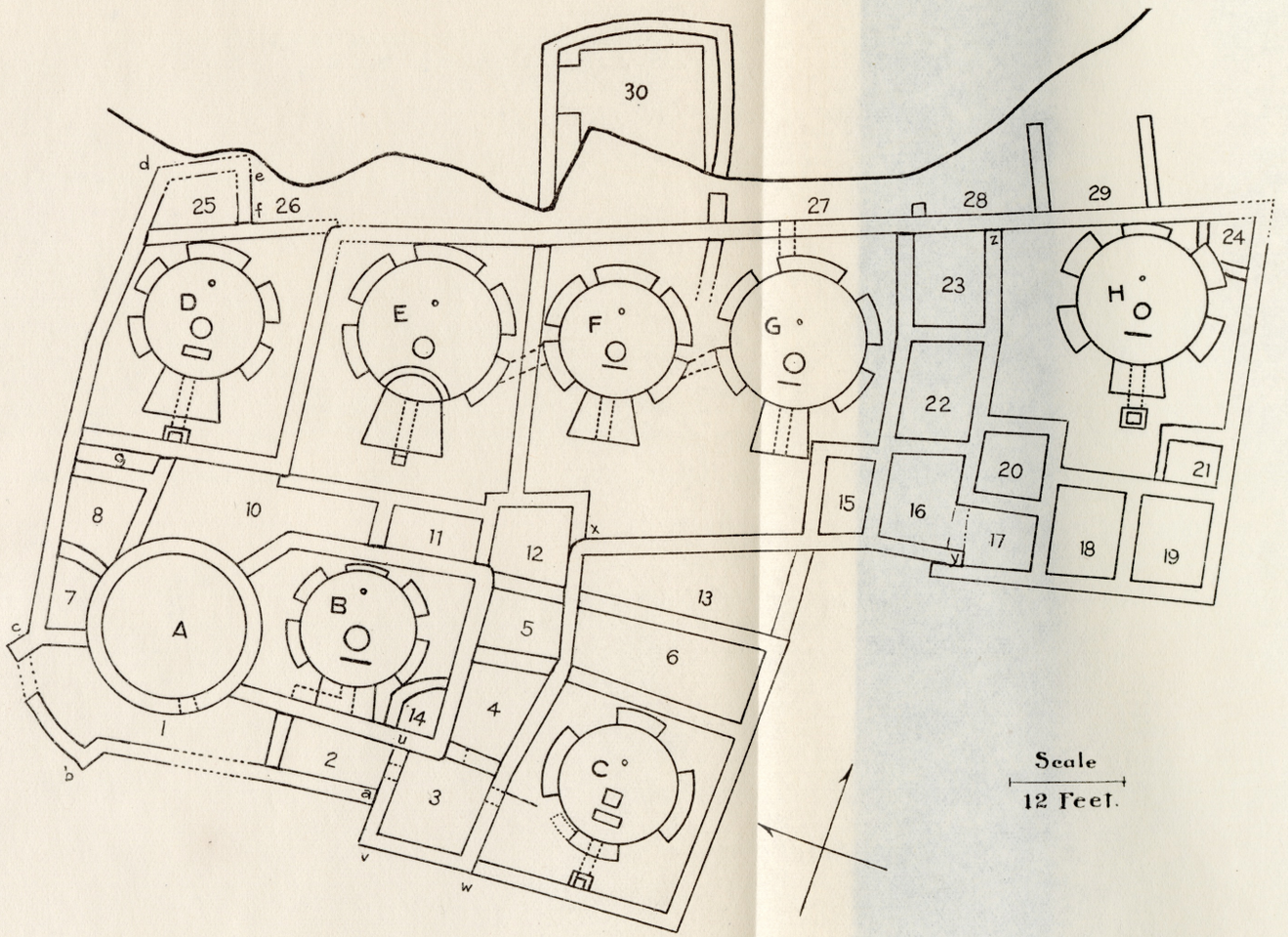
One interesting point that developed from the work is the fact of growth by accretion through which this pueblo attained its ultimate size. That it was not originally conceived as it now stands, but was expanded and enlarged as the demands of a growing group necessitated, rather than according to a predetermined scheme of development, appears from a glance at the accompanying plan. The ground-plan of the ruin is singular: rooms are of irregular shape, their relation one to another apparently haphazard, exhibiting no conformity to a preconceived plan. Walls are not always straight, but abound in curves and offsets. Such irregularity could have arisen only in a building that grew by accretion, where rooms were added when needed, and needed only when the natural growth of the group filled to overflowing the older rooms. Such a growth by gradual accretion would well account for the observed irregularity of the ground-plan. Some parts of the building may have

been added scores of years after the first rooms were built. The strongest confirmation which this theory of growth by accretion has, however, is not derived from the observed irregularity of the ground-plan, but from the character of the masonry at corners and points where walls intersect. In most places where two walls intersect, the masonry of the walls intersecting is not bonded, but one wall simply abuts against the other. This abutting of one wall against another, and the absence of any intertying walls, is a practice which inevitably would have resulted when new walls and rooms were added to those previously existing. The various places in the building where walls and rooms have been added to others already standing is clearly distinguishable in the masonry. In some cases the abutting walls have sagged away from the wall against which they abut, to such an extent indeed that it is possible to thrust an arm into the resulting crack. In other places the abutting wall has separated from the other so slightly that it would be difficult to insert a knife-blade into the opening. But always the line of intersection is sharply drawn, and never is it broken by stones which bind both walls together by having an end laid in each. This question of growth by accretion, a fact which holds true for the other larger ruins of the McElmo area, seems to go back for its explanation, in part at least, to the probable sociological organization of the ancient builders.

The kiva, or circular ceremonial room, of which every ruin in the McElmo area, great and small, has one or more, is the place in and around which the religious life of every pueblo community centered. In the case of the single family, the unit of every social organization, a kiva with several attached living-rooms sufficed for the needs of the group. But when the group expanded, when the daughters of the family grew to womanhood and drew husbands from other groups — for in the matriarchal system of descent prevalent among the Pueblo Indians of the Southwest such is the practice to-day — one kiva eventually proved too small to accommodate the people of the group, so that others with their dependent living-rooms were added. Thus the building expanded to house the growing population. Succeeding generations necessitated, from time to time, more or less extensive additions, so that the pueblo as we find it to-day is the result of gradual growth.

The presence of the abutting walls, just mentioned, throughout the building has made it possible to trace the steps through which the structure passed to reach its final proportions, and to show relatively the differences in age between its several parts. From all indications Tower A (shown in plates XXXVI, *a*, and XXXVIII) is the oldest part of the settlement. All five of the walls that radiate from it merely abut against, and do not penetrate its curving wall at any point. Tower A stands as the nucleus of the pueblo around which the building grew from time to time. The first addition to this seems to have been Kiva B and the wall that encloses it on the eastern side. This enclosing wall touches the tower wall at two points, but does not penetrate it at either, showing thereby that it is of later construction than the tower, though it is impossible at the present time to estimate the actual time difference between the two. Some time after Kiva B was built, wall *u-v-w-x-y-z* was constructed, and rooms 3, 4, 5, 15, 16, 22, and 23 were added to the pueblo. Subsequently wall *a-b-c-d-e-f* was built, and rooms 1, 7, 8, and 9 were added. Still later Kivas D, E, F, and G, and rooms 25, 26, 10, 11, and 12 were added, and lastly, on the northeast corner, the addition which contains Kiva H and rooms 20, 17, 18, 19, and 24. What place the section that contains Kiva C and rooms 6 and 13 occupies in this scheme of development, it is impossible to say, except that it is of a later period than the addition containing rooms 3, 4, 5, 15, 16, 22, and 23. Just how long a period elapsed between the building of Tower A and the finishing of the latest room, perhaps room 13, is a matter of conjecture only. It may have been two or three decades or as many centuries. The time element seems unimportant beside the fact that the growth was gradual, an architectural adaptation to the requirements of social organization.

The most important development of the architecture of these ancient inhabitants is the kiva, their ceremonial room, of which there are seven examples in the Southern pueblo of the Cannonball group. These are in the main of uniform type in this ruin, differing from one another only in unimportant details. They are circular and subterranean, ranging in diameter from eleven to thirteen and a half feet, and in depth (i. e., height) from six to seven feet. About three feet above the floor there projects from the vertical wall, which forms



GROUND PLAN OF SOUTH PUEBLO
(Surveyed and Drawn by J. H. Morley.)

A
B
C
D
E
F
1
2
3
4
5
6
7
8
10
25
26
30

SOUTH PUEBLO, SHOWING PROGRESS OF EXCAVATION

INTERIOR OF KIVA E

WEST END OF SOUTH PUEBLO, PARTLY EXCAVATED

the sides of the kiva, a slight ledge. Above this the wall has six panels, or recesses, which range in width from three to five feet, and in depth from one to four feet (pl. XXXVI, *b*; pl. XXXVIII). These recesses, which reach from the ledge just mentioned to the roof-beams, are symbolical of and were probably consecrated to the six primal directions — the four cardinal points, the zenith, and the nadir. The orientation of these recesses, while far from astronomically accurate, conforms roughly in all the kivas of this pueblo to the cardinal points: north, northeast, southeast, south, southwest, and northwest. The south recess was probably the most important. It is always very much deeper and usually a trifle wider than the other five, and also it is beneath the south recess that the horizontal passage leading to the vertical exterior shaft passed. The other features in the bottoms of the kivas of this pueblo are even more uniform than the above division of the upper half of the wall into six recesses, since one of the kivas, Kiva C (see plan), has but four recesses, one for each of the cardinal points. Just south of the back wall of the south recess there is a vertical shaft (present in all seven of the kivas), about a foot square, reaching from the surface of the ground (i. e., the roof level of the kiva) straight down to the level of the kiva floor, where it gives into a passage underneath the sill of the large south recess and opens into the kiva wall through an entrance about two feet high and a foot to a foot and a half wide. About two feet in front of this, and in a line joining the middle points of the north and south recesses, is a slab of sandstone three feet long by two high and two or three inches in thickness. This was found in four of the seven kivas examined. Another type of the same device, found in the remaining three, is of masonry — squared faced blocks of stone laid in adobe mortar. These vary in height from one to two feet, and in length from two to three feet; the thickness however is uniformly one foot. Immediately north of the object just described is the fire-pit, usually round, but square in two of the seven kivas. It was invariably found filled with fine white wood ashes, closely packed. The adobe sides of the pit in all instances had become vitrified to brick by constant use. The remaining feature of importance in the kiva is a small round hole in the floor, averaging in the kivas of the Southern pueblo three and a quarter inches in diameter and slightly

under seven inches in depth. These holes, which have been identified by Doctor J. Walter Fewkes of the Bureau of American Ethnology with the *sipapu*, or ceremonial entrance to the underworld, as used by the modern Hopi Indians of Arizona in their kiva worship, are of two types: a straight cylindrical excavation in the floor, with vertical sides, and diameter at top and bottom the same; the other a bowl-like excavation with narrow neck bellying out below. This latter type frequently had its narrow opening made from the neck of a broken bowl, which was simply plastered into the opening of the sipapu. The sides of these sipapus are of well-smoothed adobe. The edge made by the hole breaking through the surface of the floor has in all cases been rounded off. One curious point in connection with the sipapu as found in the Southern pueblo is, that when uncovered, every one of them was found to be filled with red soil closely packed to the floor level — the same red soil that covers the mesa top outside the building. Whether they had been intentionally filled by the ancient inhabitants before the structure was abandoned, or whether the choking up was accidental, it is impossible to determine positively. However, the most logical explanation seems to be that dirt and dust had blown in through the door in the roof or through the vertical shaft and had choked up the sipapu before the roof fell in and filled the entire kiva with dirt and masonry debris. Each of the seven kivas examined has at least one niche and most of them two niches, or small recesses, doubtless used for storing prayer-meal and other articles connected with the kiva worship. These are situated in the sides, below the slightly projecting ledge which marks the sill level of the six large recesses, consecrated to the six directions. These small niches, if present, are always found in the same location in every kiva. The larger one, about ten inches high by twelve inches wide and deep, is always found just under the northeast recess. The smaller niche, about six inches high, wide, and deep, is the less common of the two, and, when present, is found underneath the north recess.

Turning now to a discussion of the masonry of the Southern pueblo. The building blocks are found to be of red sandstone, a material particularly well-adapted to the needs of the aboriginal mason by reason of the ease with which it could be reduced with

primitive stone tools. The character of the masonry differs widely in the several parts of the building. Some sections, particularly the tower and the kiva interiors, show fine workmanship. The tower wall, perhaps the best in the entire building, is constructed of two courses of masonry, an outer and an inner layer of dressed stone. The stones of the outer layer appear to be square, or nearly so, but in plan they are sectors, the better to fit the curve of the wall. The stones of the outer layer are more neatly dressed than those of the inner one, and show clearly the peckings of the tool with which they were faced. They are more carefully fitted to conform with the curve of the tower than those of the inner layer, probably because the curve of the former is less sharp than that of the latter. The inner layer is composed of flatter stones, sufficiently smaller than those of the outside that the curve of the tower could be followed without the necessity of giving the inner stones concave faces. Within and without the masonry is fairly accurately coursed, but no breaking of joints is apparent. Indeed it may well be doubted whether the principle of breaking joints as we understand it was ever practised in any of the aboriginal masonry, and such of it as does occur here and there sporadically throughout the ruins seems to be rather more the result of accident than of design. The binding material was an adobe mortar, made, judging by its color, from the red soil found in abundance on the mesa top nearby. The spaces between the stones of the walls were filled with small rock spalls, which, when in place, forced the mortar closer against the wall stones; rain, however, has long since washed most of these away. It is a characteristic of this masonry that the outside walls are much more neatly dressed and coursed than the inside walls. The reducing, pointing, and facing of the rough sandstone seems to have been accomplished with a sharp implement. The small pits made by it are clearly distinguishable in any number of the carefully dressed stones used in the kiva interiors. Side by side with this high-class work of superior finish are found other sections where the building stones have received no dressing, having been fitted into the wall in the rough as they were broken by the stone mauls of the long-forgotten builders.

The greatest elements of weakness in the McElmo buildings

were: the failure to break joints, and the absence of a suitable mortar. These two causes more than all others combined have contributed to the masonry disintegration which is so widespread in this region; and yet notwithstanding these grave architectural defects, many buildings now fallen would still be standing had they not been overthrown by the vandalism of the modern digger in his unscrupulous quest for so-called "Aztec pottery."

One rather remarkable feature of the Southern pueblo is the rarity of doorways. In the entire building but four are intact, though the demolition of many of the walls may account for this comparative scarcity of entrances. The best doorway is the one in the southeast side of the tower. It is three feet three inches high, by one foot six inches wide, and its threshold is one foot two inches above the floor level. The jambs are of the same well-dressed stone as the outer layer of the tower masonry, showing the same surface peckings of the reducing tool. The lintel had been composed originally of seven small sticks, each about two inches in diameter, which rested upon the top stones of the jambs. The interstices are filled with adobe. The threshold is composed of several stones, none of which shows signs of any considerable wearing. This, coupled with the rather considerable height of the doorway (three feet three inches), lends color to the idea that the original sill is missing. A heavy stone just the width of the doorway, highly polished as if from long wear, and smoothed flat, found just in front of the door, gives confirmation to this assumption. There are two other inside openings in a room east of Kiva B. The first of these is one foot five inches high and two feet three inches wide. The lintel is composed of five cedar sticks, each about an inch and a half in diameter; these formed the support for a supernumerary lintel, a sandstone slab two inches in thickness. The other opening is two feet ten inches high, and one foot nine inches wide. The lintel is of stone and the sill is missing. The fourth and last doorway is in the front of the building, giving access through a passage into Kiva G. It should be noted that the first three of these doors are inside and that the fourth opens on to the narrow ledge between the building and the cañon.

Floors throughout the building were made of adobe. In the

OBJECTS FOUND IN THE EXCAVATIONS

kivas this was rather gray in color ; in other rooms it had been much blackened by fire. Floor excavations showed superimposed floor levels ; and from some rooms bowls and bone implements (awls, needles, etc.) were taken from beneath the upper floor level.

All traces of the roofing have long since disappeared, except perhaps a rotting beam here and there. The method practised, however, was doubtless the same as that which may be seen to-day in some of the structures of the Mesa Verde — main beams, across the short dimension of the room, upon which rested a layer of split cedar or of small sticks an inch in diameter. Upon these were spread the inner bark of the cedar, and lastly adobe poured generously on top to the depth of three or four inches. The fiber prevented the adobe, when wet, from leaking through the layer of split cedar or small sticks. This covering, once the main beams had fallen, rapidly disintegrated; the adobe, fiber, and small sticks rotting into and forming the soil, which, mixed with the fallen walls, filled all the rooms.

The specimens found during the course of the excavations are those of objects such as might be expected to have been used by primitive people. Stone axes, corn grinders (manos and metates), and worked stones for other uses, bone awls and needles, and a good representative collection of pottery. As was to be expected in the excavation of a house-site, few human remains were found, eight skeletons only, some incomplete, having been discovered, of which five were adults and three were children between one and two years of age. The skull of one of these latter, the best preserved, appears in the accompanying illustration (pl. XXXIX). Of the five adults, the entire skeletons of three were recovered. Assigning to the femur a proportion of twenty-seven percent of the entire length of the body, these three are found to be : 5.2 feet, 5.28 feet, and 5.47 feet in height, or all under five feet six inches. These values are doubtless a little low, but even discounting the slight shrinkage which inevitably takes place between the living body and the skeleton, the heights thus attained are surprisingly low. While three skeletons are far too few to form the basis for sweeping generalizations, there seems to be here, nevertheless, the possible indication that the height average among the builders of these structures was considerably

below that of our own race. All the skulls of the adults are artificially flattened at the back. The teeth in most cases showed excessive wear, doubtless due in part to the fact that many particles of sand or pulverized stone became mixed with the corn in the grinding and were eaten along with the meal. One skull is interesting because of an indentation, about a quarter of an inch deep, in the middle of the frontal bone. This had been caused by some sharp weapon, but that it had not caused the death of the individual wounded is seen from the manner in which the rough edges of the wound on the inside of the skull have been smoothed and rounded by the filling in of bony tissue after the wound had been inflicted.

Of stone implements by far the most common are the axes, of which there are thirty-two in the collection. These form a series ranging from crude rejects, which had been thrown aside for some defect or other after having been roughly blocked out, to finely executed, sharp-edged axes in hard materials. All the axes save two are of one type: a single sharpened edge with a single hafting groove in the middle. The larger of these two is fully nine and a quarter inches in length and must have been a formidable weapon when hafted to a long handle. Of other stone implements five stone disks were found, ranging in thickness from one-half to one and a quarter inches, and in diameter from four and a half to eleven inches (pl. XXXIX, *a*). Their use is unknown, but it is not improbable that they may have served as lids or coverings for the sipapus, when these ceremonial entrances to the underworld were not in use. Three of the five were found in kivas. The collection contains a few ceremonial axes, or skin-scrapers as they have been identified by some (pl. XXXIX, *o–r*.) A few small cylinders (*l*, *m*) from one-quarter to one and three-quarters inches in length and of uniform diameter, one-half to nine-sixteenths inches, were found. The use of these is unknown, though it has been suggested that they are paint-sticks, as the hematitic red rubs off if drawn across a rough surface.

One rather remarkable feature of the finds is the scarcity of objects of the projectile-point type, seven only being found. Of these four are blades (*f–i*) and three arrowpoints. One of the blades, as may be seen in the photograph, is notched on one side.

Few specimens of wood were recovered, because of the extreme perishability of that material. Two spindle-whorls of wood, however, were found, one round and the other square (*k*), and also a wooden form (*n*) for stitching skins, used after the fashion of modern darning balls.

Only a single fragment of basketry, of the coiled type, was found. The technique is finished, and it is to be regretted that more remains of this character were not recovered.

By far the most interesting and at the same time artistic class of objects recovered is the pottery. Of the ceramic art of this people one cannot speak too highly. In technique, execution, and artistic effect, they excelled. The application of geometric designs in black to a smooth surface of gray-white makes a harmonious contrast of background and decoration most pleasing to the eye. All of the pottery taken from the Cannonball ruin falls into one of two types, with an intermediate type — comparatively rare — connecting the two.

The first and by far the more common type is the black and white ware, seen in the accompanying photograph (pl. XXXIX), made by all the peoples of the San Juan drainage. This is found in a variety of shapes : mugs, shallow basin-like bowls, lids, ladles, jugs, and large ollas, or water-jars. The decoration of this black and white ware is almost exclusively confined to geometric forms in this ruin, the fragments of one bowl only being found which exhibits a realistic motive — a conventionalized bird. This restriction of designs to the geometric in one region and the prevalence of realistic forms in another perhaps but a few miles distant, and the sharp differentiation between the two are matters of common occurrence throughout the San Juan drainage. These very facts, no doubt, when the archeology of the region shall have been more thoroughly studied, will shed much light on the movements of the groups of peoples in this region.

The second type is the coiled pottery used chiefly as cooking pots or water-jars. A single example of this ware may be seen in the middle of the accompanying photograph. The example here represented is a small bowl, with slightly narrowing neck terminating in a lip, and is rather an uncommon shape for this coiled ware.

The regular and apparently the only other shape into which the coiled ware was fashioned is the olla, or water-jar. The clay which went into the making of these coiled pots is greatly inferior to that used in the black and white ware, and has resisted the action of the elements much less successfully; so that perfect pieces are extremely rare, and the reconstructed pieces difficult to assemble because of the extreme friability of the sherds. The coiled ware bears no decoration other than the indentation of the coils at short intervals, applied in the making, so that each coil will adhere firmly to the coil next below it; and a scroll appliqué attached near the rim of the olla in four places, ninety degrees apart.

The third type, mentioned above as occurring but rarely, combines the other two. The bodies of the pieces of this type are like those of the black and white ware in every detail. The necks, on the other hand, show the corrugated effect made by the indented coils of the second type. It is a combination ware, wherein the body of the piece is drawn from one type and the neck from the other. No perfect piece of this ware was recovered, and only a few sherds of two or three fragmentary bowls.

Ceramics and architecture: these are the two lines along which the aboriginal inhabitants of the McElmo and adjacent areas, the Mesa Verde, Montezuma creek, and doubtless the entire San Juan drainage, reached their highest development. The importance of the kiva and the part it played in the life of the aboriginal inhabitants, not only of this restricted area of the McElmo drainage, but also of the entire Southwest, cannot be overestimated. Even today, after more than three centuries of white domination, during which period the region has been overrun and persistently Christianized, the dwindling remnant of the Pueblo Indians still clings tenaciously to its kiva mysteries. Every pueblo has at least one kiva, and sometimes several, as Taos in northern New Mexico. These are the rooms where preparations for the dances are made, where councils are held, and where the ceremonies of the pueblo take place — where, in short, the religious life of the group centers, and from which emanates the influence that regulates all the affairs of daily life as well as defines man's duties and obligations to his Makers. A closer study of modern kivas will no doubt shed much

additional light upon those of ancient times, and at the same time dispel in large measure much of the darkness that shrouds the life of the aboriginal inhabitants of the Southwest. Indeed contemporaneous studies among the Pueblo Indians must go hand in hand with archeological research if we are to clear the mystery that surrounds the ancient civilization — contemporaneous studies which must be made in the near future if we are to preserve the ancient life and learning before its customs and traditions have been snuffed out by the advances of a higher and more aggressive civilization. Already tribal ties are breaking down, and the day is not far distant when the Pueblo Indian and his civilization will have fallen into a decay for which there is no future and only a silent past.

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